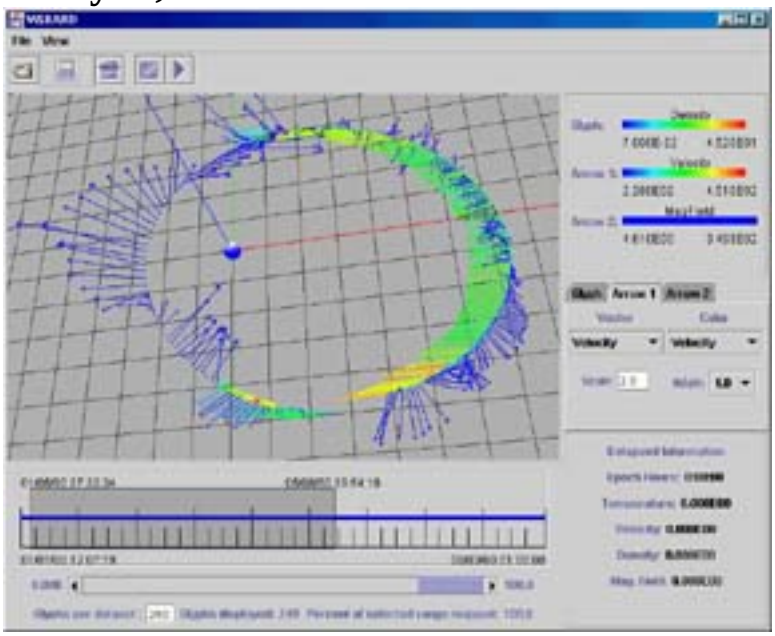
A New Paradigm for Multispacecraft Data Visualization, Analysis, and Retrieval



A prototype of a Visual System for Browsing, Analysis, and Retrieval of Data (ViSBARD), showing an orbit of Geotail data with the solar wind coming from the right and the magnetotail on the left. (Magnetic field in blue, velocity colored by density.) For details, see http://lep694.gsfc.nasa.gov/visbard/

Fundamental Question:

How can we comprehend time series of multiple quantities from multispacecraft missions?

Importance:

• Stacked plots of up to hundreds of quantities will provide little insight; we need a direct view of physical quantities in place where they we measured.
• Access to data for multiple data sets currently requires tedious searching; a direct view of what is available, coupled with the ability to scroll through it and download prepared data sets will allow scientific research to proceed much more efficiently.

Science Objectives:

• Understand the global dynamics of the magnetosphere.
• Determine how specific events are correlated with other events in large space-plasma systems.

Technology Description:

• Current development uses Java3D to produce an interactive application that allows data ingestion and visualization; downloading will also be possible.

Technology Requirements:

• Largely platform independent code to perform visualization, data gathering from local and remote sources in standard formats (e.g., ASCII, CDF), and local processing and analysis.